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NATIONAL ENERGY ISSUES

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HEARING
before the
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE
ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

TO RECEIVE TESTIMONY ON LEGISLATIVE PROPOSALS RELATED TO ENERGYEFFICIENCY, INCLUDING S. 352, THE ENERGY EMERGENCY RESPONSE ACT OF2001; TITLE XIII OF S. 597, THE COMPREHENSIVE AND BALANCED ENERGYPOLICY ACT OF 2001; SECTION 602-606 OF S. 388, THE NATIONAL ENERGYSECURITY ACT OF 2001; S. 95, THE FEDERAL ENERGY BANK ACT, AND S.J. RES.15, PROVIDING FOR CONGRESSIONAL DISAPPROVAL OF THE RULE SUBMITTED BYTHE DEPARTMENT OF ENERGY RELATING TO THE POSTPONEMENT OF THE EFFECTIVEDATE OF ENERGY CONSERVATION STANDARDS FOR CENTRAL AIR CONDITIONERS

TO RECEIVE TESTIMONY ON LEGISLATIVE PROPOSALS RELATED TO REDUCING THE DEMAND FOR PETROLEUM PRODUCTS IN THE LIGHT DUTY VEHICLE SECTOR

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JULY 13, 2001

JULY 17, 2001

JULY 18, 2001

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PART 2

The Chairman. Thank you very much.
Senator Carper.

STATEMENT OF HON. THOMAS R. CARPER, U.S. SENATOR
FROM DELAWARE

Senator Carper. Mr. Gibbens, I missed your testimony. I apologize for arriving late. Take just a minute and hit me with some of the most important things you said, please.

Mr. Gibbens. Well, I think the most important thing is that any of the mandates, either on the current mandated fleets or on the proposed government or private fleet, simply will not give you the petroleum reduction that was envisioned in EPAct. Studies have indicated that all those fleets, if they fully complied, would only give about a 1.5 percent reduction. As much as we would like to comply, there are significant barriers, cost barriers in the acquisition of the vehicles, disposal of the vehicles, the kinds of vehicles, alternative fuel vehicles that might be available to meet our operational needs, and probably most significant, as everybody has mentioned here, is if I choose a particular alternative fuel type vehicle where do I get the fuel? In other words, where is the fuel infrastructure? Unless I choose to fund that, which is very expensive, the marketplace is just simply not there for us to pick any particular type of alternative fuel vehicle and then be guaranteed a place that I can go refuel that vehicle.

So those are the major points in my presentation.

Senator Carper. Thank you.

Dr. McCormick, about a year and a half ago I was in Michigan for a wedding and I happened to spend some time visiting with Rick Wagner. He said: We are having an auto show in Detroit right about now. It was January 2000. He said: If you want to go, we will try to arrange it to get you in. I had about an hour or so and I went to the auto show.

Among the things I saw there was a GM concept vehicle. I am trying to remember the name of it. I think it started with a ``P''.

Dr. McCormick. Precept.

Senator Carper. Precept, yes. Precept, which I think was expected to be available for purchase maybe in 2004. I seem to recall that it is expected to realize 70 or 80 miles a gallon. It was a hybrid. I was excited about it at the time, thought about it often since then. Whatever happened to Precept?

Dr. McCormick. Well, let us go through the history of Precept. It is a derivative of our PNGV program and it did achieve those remarkable mileages. I might add that we did a mockup fuel cell version which had fuel economies of over 100 miles per gallon as well. That was not intended to be a for-sale vehicle. It had a lot of very advanced technologies in it, many, many patents. But I think very rapidly you will see those begin to transition into more conventional cars. I agree with you it was an astounding car, and now we are trying to move the technologies as quickly as we can into our base vehicles.

Senator Carper. You might be right, and a year and a half ago maybe there was no notion or interest at all in making that a vehicle widely available for distribution. That sure was not my understanding at the time, it really was not.

Let me just ask--I am a guy who believes in buying domestic cars. We buy Ford, Chryslers, GM in our home. A little over a year ago a woman pulled up to my office, when I was Governor of Delaware, pulled up to our office and said: I bought a new car. I said: What did you get? She said: I bought a Toyota. After I chastised her, she said: Well, it is a Toyota, it gets exceptional gas mileage. She said: Come take a look at it.

I did. It is their hybrid, and I was struck by the fact that it is actually a reasonably attractive vehicle, that the size of the battery pack was not all that great, it is four-door and reasonable trunk space. The cost was I think maybe $20,000, which I am told that Toyota takes about a $10,000 loss on each vehicle they sell. I think they are building about 20,000 of them this year. What I am told, they are selling basically all that they make.

I think Honda has a hybrid out as well. But I am concerned. Here we are, the United States, leader of the free world, leader of the world, and we have got Toyota and Honda out there not just building these cars, but actually taking them to market and selling them in numbers which I think with Honda, I think they are going to expand their hybrids to not only go into the--what is their hybrid called?

Mr. Zeltmann. Honda Insight.

Senator Carper. Yes, Honda Insight. I hear they may be taking it to the Civic, putting it as a powerplant in some of the Civics, within a year or so. I am just troubled by the fact that--this goes back to my excitement with the Precept. I said, well, 2004 is a lot of time to wait for the Precept, but it is better than not at all. Yet we have got the folks from Honda and the people from Toyota with vehicles on the road, not in huge numbers but significant numbers, but in numbers that are going to grow rather substantially, getting 50, 60 miles per gallon, and we are looking forward to a vehicle in model year 2003, maybe 2004.

Why are they ahead of us? I do not mean to be argumentative. It is just troubling to me.

Dr. McCormick. I feel I need to respond. I do not believe they are ahead of us. First of all, we did the EV-1 and drove the electric propulsion. We were the people that really broke the ground for a lot of this, and from that we learned a lot, one of which is for these vehicles to sell you have to bring them in at a very reasonable price. Also, we learned from the electric vehicle that we needed something other than an electric battery or we would not be able to sell them in quantity.

We are developing the technology very aggressively and are bringing out a variety of vehicles in the 2004 time frame. They are focused particularly on the heavy duty vehicles, the trucks, because those are the vehicles that consume the most fuel and that is the place where we can get the most benefit in terms of imported petroleum.

You correctly noted--and I would note that we have a deep partnership with Toyota, so we understand propulsion with them--that both of those two vehicle types are subsidized. So it is a matter of how much do you want to lose in putting those vehicles out there versus what you can learn. We actually believe that our 2004 pickup truck is actually a sound financial and business plan and will actually make money, and that is the key to these things. If you want them to be sustainable, you have to have the right product that consumers will buy and actually make money.

So I think you will see these vehicles out there. We also have our Paradigm system coming about at that time, which will go across mid-sized vehicles. So I think we are right report with them. These early vehicles are matters of how much money are you willing to lose.

Mr. Dana. Senator, may I make one point also?

Senator Carper. Yes, please.

Mr. Dana. The Precept, which is one of, as Dr. McCormick said, of the PNGV program, the manufacturers of PNGV focused on diesel hybrids. Right now EPA has put out a final rule that would clean up diesel fuel by 2006. That rule is in litigation, and there are also emissions standards----

Senat**or Carper**. What are you saying, that rule is in litigation?

Mr. Dana. Yes, it is. EPA has also set emissions standards for 2004 and later vehicles where the ability of a diesel engine to meet those standards is somewhat questionable. It really depends upon this clean fuel that is being put out there. So in some ways I think it

is fair to say that manufacturers who are looking at diesel have some roadblocks in the future years in terms of do you really want to commit to large volume production until these things are cleared up and what is going to happen in that future.

Senator Carper. Thank you.

Is my understanding about Honda putting the hybrid propulsion system in Civics, is that correct? Are they going to do that?

Mr. Dana. That has been announced in the press.

Senator Carper. Do you think they are doing it to lose money?

Dr. McCormick. Well, at the end of the day let us see what they price it at and how many of them they sell. Again, we did not do the EV-1 to lose money either, but it is a tough proposition. You have got to see what the consumer is willing to pay.

Mr. Kolodziej. Senator.

Senator Carper. Yes, please.

Mr. Kolodziej. Honda is a very smart company and it makes sense for them to do whatever they are doing. So if they are putting it in the Civic it makes sense somehow economically for them.

The other important point for you is to keep in mind that the cleanest internal combustion vehicle ever commercially produced is being made right now in Ohio. It is a Honda. It is a Honda Civic GX natural gas vehicle. But every one of them are made in Ohio.

Senator Carper. Marysville?

Mr. Kolodziej. I believe it is Marysville.

Senator Carper. Dr. McCormick, you talked about the truck that they are going to introduce the hybrid in. That was model year 2004. Any idea what the gas mileage would be without the hybrid?

Dr. McCormick. I do not remember the exact numbers. That is about, over the drive cycles that we look at, that is about a 15 percent improvement in the fuel economy of that vehicle.

Senator Carper. Roughly what would its fuel economy be without the hybrid?

Dr. McCormick. I do not know that I remember that off the top of my head.

Senator Carper. Well, let us just say it is 16 miles per gallon. Let us say it is 20, let us say it is 20. 15 percent would go from 20 to 23 miles per gallon, right. I know there is a good explanation as to why that is better, to make that 3 miles per gallon jump in a vehicle. What would you sell, half a million of them, 250,000?

Dr. McCormick. We are expecting the number to be somewhat smaller because of the premium.

Senator Carper. Because of?

Dr. McCormick. We are expecting the number of vehicles to be sold to be smaller than that because of the premium price for it. We are going to find out.

Senator Carper. Just refresh me again on why are we better off as a country to realize a 3 miles per gallon increase in the efficiency of that pickup truck as opposed to a Precept that would get twice the gas mileage?

Dr. McCormick. I do not think we are. I think we want to get to twice the gas mileage, which is again why I am advocating fuel cells.

Senator Carper. But in the near term. We realize and I applaud what you are doing in fuel cells and I think it is exciting, I am anxious to get there, anxious for us to adopt a

policy that is supportive. But in the meantime, we are stuck with what we have. In the meantime, we have the potential for some of the alternative vehicles and fuels that we have talked about, and in the meantime we have this hybrid technology.

I am intrigued to see somebody out there, Honda, thinks that they are onto something, and they are going to start expanding, not just into that one vehicle, but into maybe others. What I am having a hard time understanding--and I certainly do not mean to be picking on you, but I am having a hard time understanding why we are better off increasing the efficiency and one vehicle go from 20 to 23--and I have had the same conversation with my friends from Daimler Chrysler about the Durango, which is built in my State.

Why are we better off going from 20 to 23 and why do we not find some vehicles that we could come closer to the Precept as well? Is it the fear that nobody will buy them?

Dr. McCormick. Well, two comments. First of all, I want to make sure that you are clear that we are also bringing out a mid-sized car using the Paradigm system in that time frame. So it is not just the truck that we are looking at.

But when you look at where the fuel is actually used, it turns out when you do the mathematics, actually sit down and do the calculation, a similar improvement on a high fuel usage car net gives you less fuel imported than a similar improvement on a higher mileage car percentage-wise.

Senator Carper. I asked you earlier how many pickups you thought you would make with the hybrid system in them and I think you said probably fewer than 250,000 per year.

Dr. McCormick. We are not sure quite what that number is, but we are being conservative going forward to make the business case for it.

Senator Carper. Let us just assume for the moment that it is 200,000. Let me see if I can do any math in my head still at this advanced age. But if you have 200,000 vehicles that you sell and you get an increase in mileage of 3 miles per gallon, that would be what, 600,000. If you could sell, gosh, 20,000 vehicles that got an extra 30 miles per gallon, the savings would be the same. Am I missing something there?

Dr. McCormick. Yes. You have to look at miles driven and total miles used per year. So across a 10,000 mile annual drive something that gets 20 miles per gallon uses a lot more fuel and so consequently a small improvement in that really affects the bottom line amount of fuel. Remember, the people drive the same number of miles per year and so you get a disproportionate gain in the total fuel used.

Senator Carper. Let me just carry out my example earlier. The same situation, 200,000 pickup trucks, 3 miles, increased miles per gallon. If we were able to--let us see. If you were able to build and sell 40,000 vehicles, 40,000 vehicles like a Precept, but even not nearly as good as a Precept, but if you were able to sell 40,000 vehicles that were only driven half as much, only half as much, but got an extra 30 miles per gallon, you would be at a break-even.

Is part of what is not being said here that the reason why it makes sense to put them on the SUV's and the trucks is because that is where we make money when we build vehicles? We do not make money, if you are Chrysler, they do not make money selling Neons. They make money selling Jeeps.

I do not know if you folks make much money on your Cavalier. You make money on your Tahoe. In terms of being able to do this in a way that makes sense for your

company, trying to understand the logic and rationale for going with the trucks and the SUV's is in order for the free enterprise system to work and for you to make money doing this stuff you have got to put it into vehicles, because there is extra cost, you vehicle got to put them into vehicles that you can sell at a markup and will cover your costs.

Is that part of it?

Mr. Kolodziej. Senator, this is not my area, but I just cannot keep my mouth shut. The issue is fuel displacement. If you have got a vehicle that is getting 30 miles per gallon and mom and pop buys them, mom and pop is driving 12,000 miles a year using, what, 400 gallons, 400 gallons. Now, you have got a duty cycle on a pickup truck, you might be putting 60,000 miles on that vehicle at 20 miles to the gallon. That vehicle is using 3,000 gallons.

If you can increase the fuel efficiency on that vehicle 15 percent, you have got an increase of a lot. If you doubled it from mom and pop--you are actually getting more fuel displacement by going after the heavier duty vehicles. Even though it looks like a smaller number, because of the duty cycles you can get a bigger impact. A class A truck might go 120,000 miles a year at 6 miles or 4 miles a gallon. So if you can get a small percentage increase improvement there, you can have a big impact on the total fuel use.

As to the financial strategy, Byron, you want to answer your financial strategy?

Dr. McCormick. Let me expand on that. Actually we have introduced hybrid buses and it turns out that if you did 13,000, a very small number, 13,000 hybrid bus propulsion systems in the United States, that would be equivalent to a half a million Prius's in terms of fuel displaced. So I think the calculation that Rich talked about is very key and what you want to do is calculate how many gallons of fuel does a vehicle use per year and then how much can I improve that, and you find out that the average consumer driving an SUV, a bigger truck, consumes so much fuel that a percentage improvement there is very, very, very effective.

Senator Carper. What I want to do is sit down with pen and paper and my calculator and run some numbers, not at a hearing but afterwards. Tom Davis was by, who runs your truck operation, last week and I spent some time with him. He talked about the buses. It is very promising, very promising, and I am encouraged by what you are doing there and hope that maybe in a later round of questioning if we have that that I can pursue that with you. Thank you.

The Chairman. If you had another question, why do you not go ahead.

Senator Carper. Mr. Chairman, I have got enough questions here to keep us here for 2 days.

The Chairman. Well, maybe you should visit with some of the witnesses after the hearing, then, because we are about to adjourn the hearing. I think everyone----

Senator Carper. Could I ask one more, then?

The Chairman. Sure.

Senator Carper. Thanks very much.

In Delaware we raise--we build more cars, trucks, vans, automotive vehicles than any other State per capita. We also raise more chickens per capita than any other State. We raise more soybeans in Sussex County, Delaware, than any county in America, and we are real interested in trying to find ways to take the oil from soybeans and to turn it into a product that can be mixed maybe with diesel fuel and come up with something that is fuel

efficient, good for the environment, and that helps commodity prices for soybeans as well.

We are finding when we tested it in our DELDOT vehicles in Delaware for the last year, year and a half or so, and we find it does pretty well with respect to fuel efficiency. We find that it actually smells pretty good. It smells like french fries. But we find that on the emissions side the only area that it lets us down is on NO<INF>X</INF>. The NO<INF>X</INF> emissions are a little bit higher.

I do not know who was testifying earlier, maybe it was Mr. Marshall, talking about ethanol and trying to encourage people to buy ethanol. But as I listened to you I think I heard you say that for folks to use ethanol to power their vehicles it costs a little bit more, the fuel efficiency is not quite as good, and it is harder to find, it is less convenient for the consumers, which probably explains why we do not use as much of it. If it costs more, it is less efficient, and it is harder to find, that would discourage me from using it, and that is from a guy where we raise a lot of corn and a lot of soybeans.

Mr. Marshall. Senator, part of the problem is we can build an automobile that runs on almost any fuel, but the problem is with the infrastructure, the availability of fuel. The different fuels that are out there, none of them are quite as easily available as gasoline, which we have used for many, many years. That is part of the problem we have been talking about, all of us, about the infrastructure development that is necessary.

Senator Carper. Go ahead, Mr. Marshall. Go ahead and make a comment, and then I will jump in.

Mr. Marshall. You hit on a number of points. The key point is providing the incentives to utilize the product. Ethanol can compete very well with compressed natural gas, propane, or anything else provided the incentives are on a gasoline equivalent basis and the energy is as well. The big problem has been availability. Where we have been able to go in and specifically target areas around the country--Chicago, Denver, and some of the other places--and look at alternative fuels there, we have been able to provide it through some of the existing infrastructure and it is working very, very well. All we need to do is expand the program.

Ethanol and E-85 is kind of in its infancy as compared to some of the other alternative fuels, but certainly, provided the opportunity, we have a lot of promise and a lot of potential to move forward.

Senator Carper. Mr. Chairman, I think we have got all these gas stations around the country and they are on our block. Pretty much wherever we live, it is not too far to get to a gas station and we can buy the gasoline that we need for our cars, trucks, and vans. If we want to buy ethanol or soy diesel, if you want to buy some kind of natural gas--I am actually a Governor who used to have a vehicle that was powered by natural gas, a combination of natural gas and gasoline, so I believe in that stuff. But it was hard to find. I think we had three stations in all of Delaware where you could get the stuff, so it was not all that convenient.

But part of the--and we do not expect GM or Chrysler or Ford or anybody to build vehicles that nobody is going to buy. We do not expect them to build vehicles that they are going to lose money on, at least for long.

But this infrastructure, they put their fingers on a big one, and that is that this infrastructure, whether it is hydrogen or gasoline or alternative fuels or ethanol, unless we

can somehow get our arms around that one and deal with it we are not going to be successful in this area.

The other thing, if we were on a committee where we actually got to write tax bills, tax legislation, and we could put in place all these incentives, I think we could probably do that pretty well. Unfortunately, that is not our job. But we get to work with the folks who are in that business and hopefully we will have some success in moving them along.

The last thing I would say is at the port of Wilmington we bring in, export GM products, and we are grateful for that business. We do a fair amount of business with Ford, some day maybe with Chrysler. We also do a lot of business with Volkswagen, and I visit with the folks up at Auburn Hills from time to time at Volkswagen America.

They say: You know, back in Europe we do great things with diesel. We get terrific fuel performance with diesel, 40, 50 miles per gallon, even better than that. They said they question why in America we do not do more with diesel. I said, well, it has something to do with the emissions. Someone talked earlier about I think it is the 2006 time target date.

Just take a minute, somebody who is familiar with the emissions problem that we have with diesel. Why are we unable to make as effective use of diesel today in the twenty first century as they are doing over in Europe?

Mr. Dana. That is something that we hope to be able to do, Senator. What has happened is diesel has always been used in Europe at a fairly substantial rate in the passenger automobile fleet, so a lot of the technological development has been driven in Europe. We now have very, very efficient diesels.

Most people in this country do not realize you can build a diesel that is quiet, clean, no black smoke, and is very comfortable to ride in because the diesel penetration in any kind of light duty vehicle in this market is very, very small.

The problem I mentioned earlier, we see diesel as one of the potential tools the industry has to improve fuel efficiency of the vehicle fleet, but because of the conundrum of the existing emissions standards for 2004 and later and the clean fuel that is supposed to be coming in 2006, I think it is difficult for a manufacturer to commit resources with an unsure future.

If we can see a future out there that says this will be viable for the long term, I think they will make the commitment, the dollar commitment to make that technology available. Clearly, there have been very big advances in diesel technology and with the clean fuel we think they can meet most of the emissions standards that are being proposed.

Senator Carper. The interesting thing, Mr. Chairman, about the diesel alternative is that the infrastructure is there. In most places where you buy gasoline, a lot of those places you can buy diesel as well. If we could figure out how to hit our emissions targets, that would certainly appear to have a fair amount of promise.

I have gone too long. Thank you for your patience. To our witnesses, especially Dr. Mccormick, thank you very, very much for being here and sharing your thoughts. I appreciate the chance to come back to you later on with follow-up. Thank you.

The Chairman. Well, thank you all very much. I think it has
been very useful testimony, and we will adjourn the hearing.

The Chairman. Senator Carper, would you like to make any statement?

STATEMENT OF HON. THOMAS R. CARPER, U.S. SENATOR
FROM DELAWARE

Senator Carper. I feel inspired by the comments of Senator Burns and Senator Murkowski. I would make a very brief comment. I received a memo, I think yesterday, from Robert Simon, our staff director on the Democratic side and Bryan Hannegan, staff scientist, and this goes back to a point that Senator Murkowski was making about not being able to throw money at problems, even though on the R&D side, and I was just reading this last night. It says studies of the areas supported by Department of Energy R&D funding suggest significant payoffs from the research funded according to Department of Energy and validated by a GAO study. Efficiency R&D programs have returned over $100 billion to the U.S. economy for Federal investment of less than $13 billion since 1978. It goes on to mention a new report from the National Academy of Sciences. It reviews the Department of Energy's funding of DOE and fossil and energy efficiency areas and it looked at, I think, 17 R&D programs on energy efficiency that go back to 1978 and concluded that the Department of Energy's investment of $1.6 billion resulted in a return of about $30 billion. So, we're not just throwing money at these problems and issues but actually making some sound accomplishments. I would just want to put that on the record.

The Chairman. Thank you very much.

The Chairman. Senator Carper.

Senator Carper. Thank you, Mr. Chairman and Mr. Blake, welcome. We appreciate your being here and appreciate your testimony. I want to follow up just a little bit on a somewhat different direction. The questioning was being pursued by Senator Murkowski. And if you don't know a whole lot of detail, that's fine. But with respect to nuclear energy, I'm an old Navy guy and in the Navy, we have ships that are powered by nuclear powerplants. We have submarines that are powered by nuclear powerplants and I told my colleagues at a Senate Democratic retreat earlier this year that I took a bunch of boy scouts down to the Norfolk Naval Station and we visited the Teddy Roosevelt, the big aircraft carrier. It is about a thousand feet long and about 25 stories high. Maybe 5,000 people aboard when they deploy about 70 aircraft and it needs to refuel once every 25 years. I was struck by that and the kind of potential that I think nuclear power continues to offer to us in this country. I know some of the research that you do relates to what to do with the waste product that comes from nuclear powerplants. And I would just appreciate a little primer on what's the latest. What is going on in that area? Is there some promise; is there something new that we ought to know about and be mindful of?

Mr. Blake. Well, I think the technology probably that this committee is aware of involves using accelerators to reprocess and render inert the residues. I am not, although I have had some experience with the nuclear industry, I am not a technologist. So, I'm going to need a primer as much as you do, Senator.

Senator Carper. I thought you were talking about the accelerators on a car.

[Laughter.]

Senator Carper. Can you provide for the record just an update for me on what's going on, and I'm not looking for a tome or anything.

Mr. Blake. I will.

Senator Carper. Another issue. I presume that we have a fair amount of research that goes on within your own laboratories, your own employees, and I presume that we contract with folks in academia to do some research projects. And I presume there's a partnership. They exist in the private sector. I think that one of our friends from General Motors may have alluded yesterday to fuel cell research where the Government played a role. Can you just tell us how it works and how we try not to end up duplicating one another's efforts but are actually working together?

Mr. Blake. I can tell you again from the experience I had in the private sector. The way that works is the Government suggests areas where further developments and enhancements would be appropriate. The Department will typically get bids in from the private sector, saying I can build a car of X-efficiency or Y-efficiency. They will select the winning bidder and then the terms of the work is laid out. The Department and the private sector participant will sit down and they will map out a program saying this is what we are going to do. We need to develop these kinds of technologies, materials, and the like. The Government will typically retain some intellectual property in what's developed and there will be an agreement on cost sharing and a review of how costs are allocated to that contract.

Senator Carper. Okay.

Mr. Blake. And it does vary a bit contract to contract. Some, the Government share is relatively modest and in others it is the predominant share.

Senator Carper. Maybe one other question, if I could ask. The appropriate role, it seems to me, of the Federal Government is research, R&D in these areas. I like to say the role of government is to steer the boat, not to row the boat, and I think that is probably true here. But having said that, I am also struck sometimes by our inability as a country to take some very good research and development information and to be able to commercialize that research and to put it in products or projects, in some cases products that people will buy.

We had our auto folks here yesterday and we talked a bit about hybrids. We have hybrids but for the most part, we are not seeing hybrid cars, trucks, vans produced in this country. We're not going to see very many produced in this country that even take good advantage of that technology. However, we're seeing Toyota and Honda actually begin to work with it pretty well.

Basically, my question is commercialization. What role does the Department of Energy play and I ask this as a new member of the committee. I've been here a week. What role does the Department play with respect to not just helping fund the R&D and direct the R&D, but actually to nurture and to encourage the commercialization of the most promising technologies so we will get a real payoff from the research that has been done?

Mr. Blake. I think our bias, Senator, is similar to yours which is that the actual commercialization belongs in the private sector. There are some instances where the Department will participate in that but they are infrequent, and the history is that they haven't been very successful. The fuel cell is an interesting example in the sense that it was originally developed as part of a governmental program with NASA and that technology was not commercialized obviously for years and years but then when you get

changes in energy prices, some constraints on the transmission grid, some interest in further fuel efficiency in vehicles, that spurs additional research and development that the Department participates in, and then hopefully commercialization. But in direct answer, I think we try not to involve ourselves too often in the direct commercialization but leave it that to the private sector.

Senator Carper. Thank you, Mr. Chairman.

The Chairman. Thank you.

Senator Burns. We are seeing a lot of interest in coal bed methane right now in our part of the world. And it is a fuel that can be extracted from a fossil base basically, and once we figure out what to do with the water and after the extraction, why, I think it has a great future. Also, in the area of nuclear, as I looked at Le Hauge in France, where they vitrify and reprocess high-level nuclear waste and in particular those rods that come out of powerplants. We look and we're kind of shortsighted in this country, thinking that well, most of these rods come from our ability to produce electricity, and I think Senator Carper brought it up. We've got a Navy that's nuclear. It moves by nuclear power. We have to do something to deal with that situation and so I would imagine. Are we still doing some R&D on vitrification and reprocessing on another way to deal with high level nuclear waste?

Mr. Blake. Yes, sir. I cannot respond on vitrification but on reprocessing, yes.